(No Model.) 2 Sheets—Sheet 1.

J. SKINNER.

CAR COUPLING.

No. 417,103. Patented Dec. 10, 1889.

Fig. 1

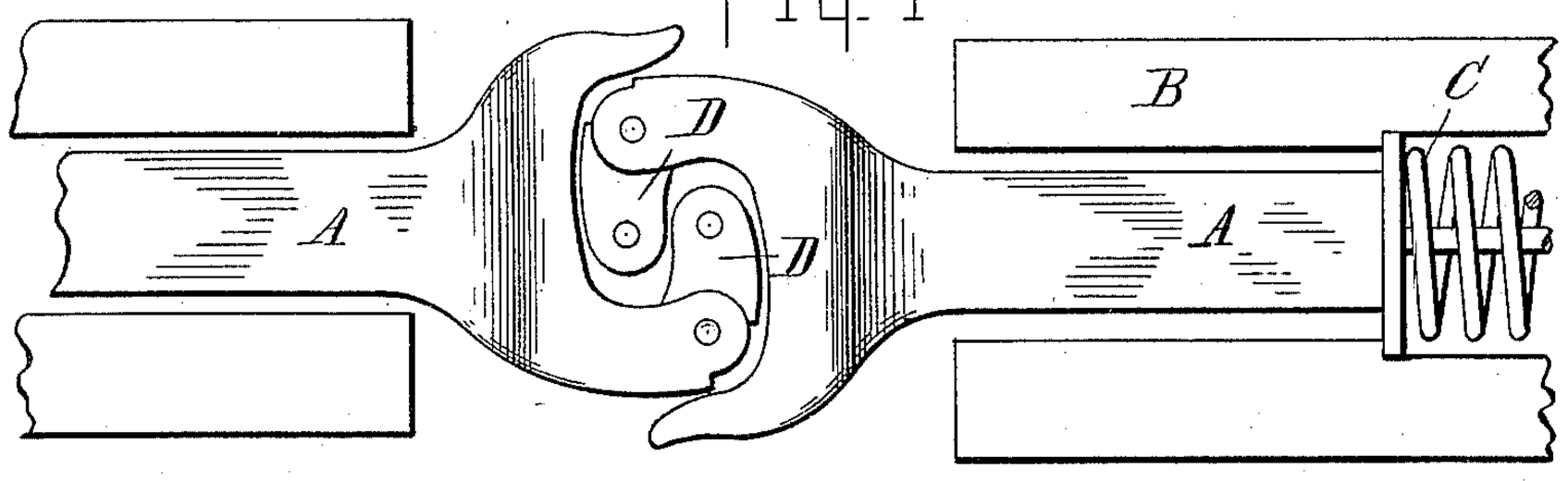


Fig. 2

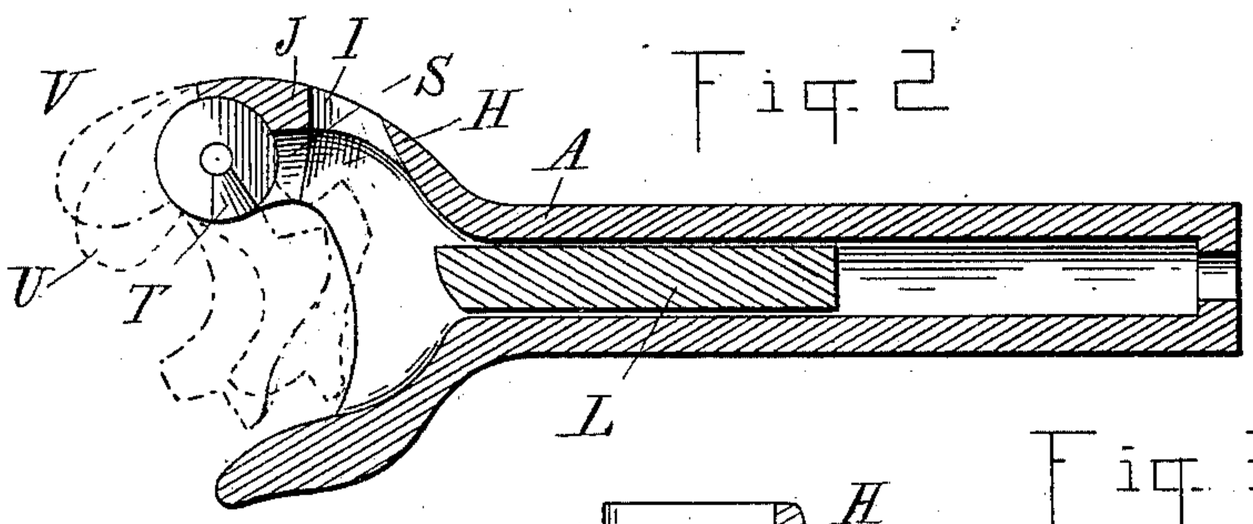


Fig. 3

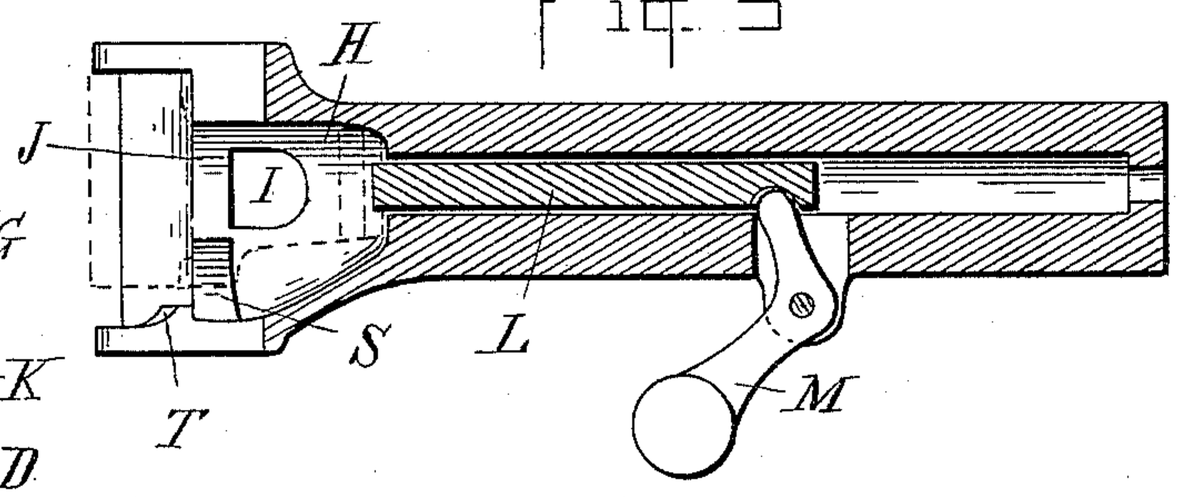


Fig. 4

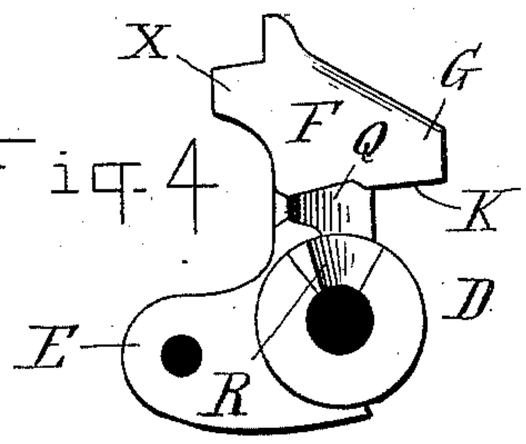


Fig. 5

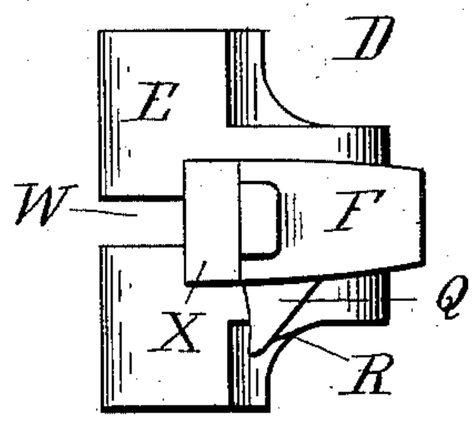
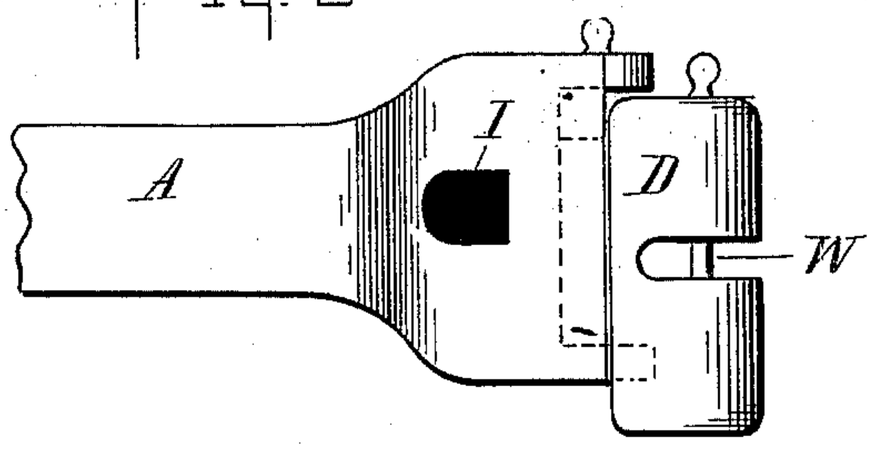


Fig. 6



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(No Model.) 2 Sheets—Sheet 2.

J. SKINNER.

CAR COUPLING.

No. 417,103. Patented Dec. 10, 1889.

Fig. 7

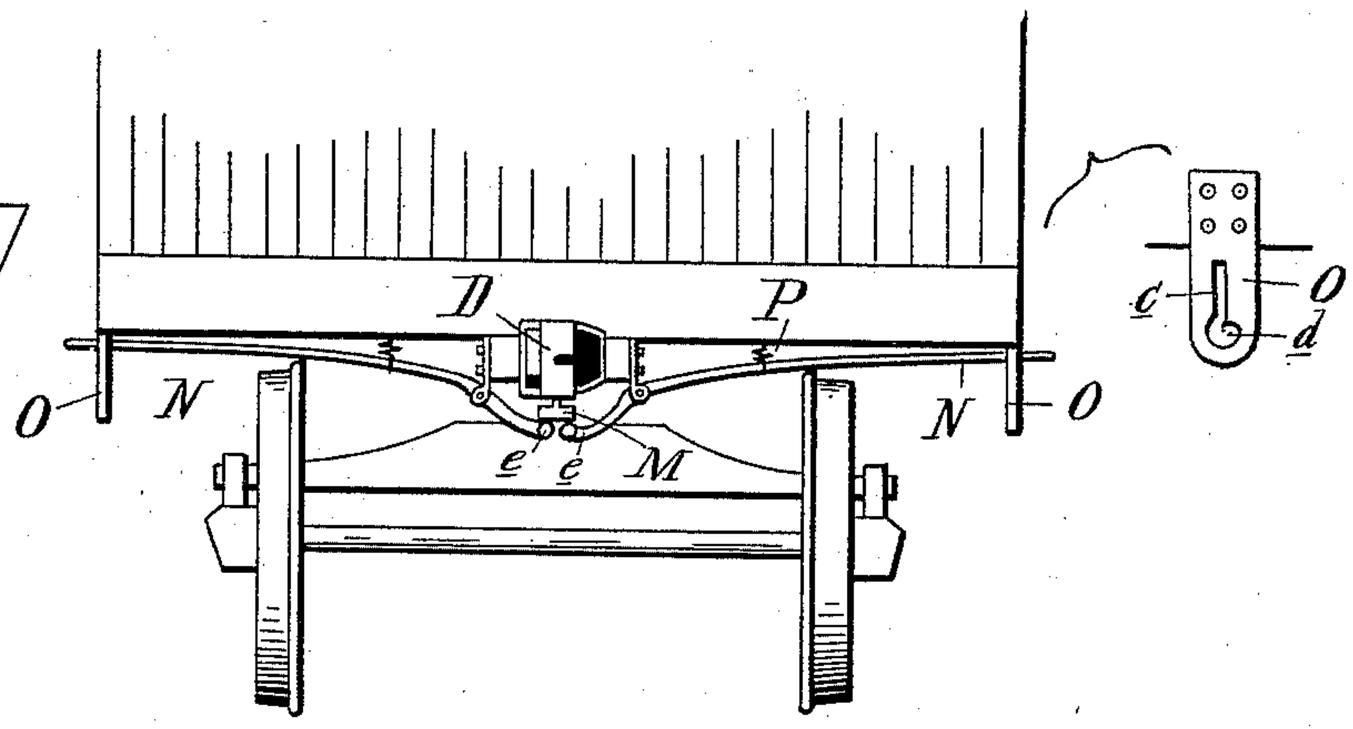
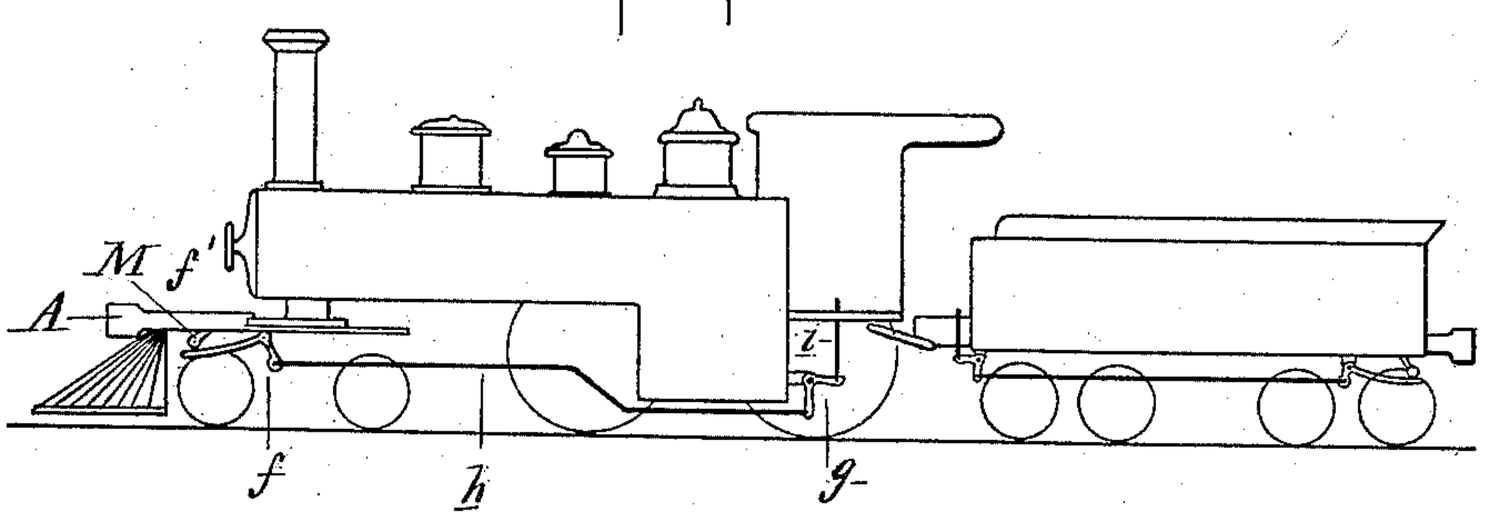


Fig. 8



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UNITED STATES PATENT OFFICE.

JOHN SKINNER, OF FLINT, MICHIGAN, ASSIGNOR OF ONE-HALF TO OREN STONE, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 417,103, dated December 10, 1889.

Application filed September 20, 1889. Serial No. 324,571. (No model.)

To all whom it may concern:

Be it known that I, JOHN SKINNER, a citizen of the United States, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in car-couplers; and the invention is especially designed to be applied to that type known as "automatic vertical-plane couplers," in which the draw-head is provided with a pivoted swinging vertical hook; and to this end my invention consists, first, in providing means for automatically throwing the coupler-hook into position for coupling whenever the locking-bolt is withdrawn; secondly, in holding it in such position against accidental displacement; thirdly, in improved construction for using it with the ordinary link-and-pin coupler; fourthly, in providing means for operating the couplers on the front and rear of the locomotive from the cab, and, fifthly, in the peculiar construction and arrangement of parts, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a plan view of two couplers in coupled position. Fig. 2 is a horizontal section through one of the couplers, with the hook shown in dotted lines in two positions. Fig. 3 is a vertical central longitudinal section of Fig. 2. Fig. 4 is a bottom plan of the coupler-hook detached. Fig. 5 is a rear elevation of the same. Fig. 6 is a side elevation of the coupler with the hook thrown open. Fig. 7 is an end elevation of the car to which my coupler is attached, and Fig. 8 is a diagram showing the connection between the couplers of the locomotive and the cab.

A is the draw-head, B the draft-timbers, C the bumper-spring, and D the coupling-hook, of a car-coupler of known construction, except as hereinafter described.

The coupling-hook D consists of the coupling-arm E and the locking-arm F, which latter is at about right angles, or nearly so, to the coupling-arm, and in a lock position of the coupling-hook extends rearwardly in a line with the draft. The rear end of this locking-arm is provided with the lateral offset G at right angles, or nearly so, with the locking-arm of the coupling-hook. The side support of the draw-head is provided upon its inner face with the longitudinal recess H, adapted to receive the locking-arm of the coupling-hook, and with the transverse recess I, adapted to receive the offset G of the locking-arm. This transverse recess I forms in the forward part of the draw-head a stationary abutment J, upon which the shoulder K of the locking-arm engages.

L is a sliding latch seated in the draw-head in the rear of the locking-arm of the coupling-hook and adapted to project forward sufficiently to lock the rear end of the locking-arm into the recess in the draw-head.

M is a gravity-dog pivotally secured to the under side of the draw-head to operate in a vertical plane, and engaging with the locking-latch, all so arranged that the gravity-dog normally keeps the latch L projected forward in its locking position.

N is an uncoupling-lever, with one end extending toward the side of the car and engaging into a slotted stirrup O, which is provided with the vertical slot *c*, which terminates in the lateral offset *d*, to hold the lever in its uncoupled position and prevent coupling. A spring P is secured to this lever to guard against accidental displacement in whichever position the lever is placed. The inner end of this coupling-lever is provided with the cross-head *e*, which impinges against the free end of the gravity-dog, and this coupling device may be applied to both sides of the dog.

Heretofore the great difficulty with couplers of this description has been to keep the hooks in the proper position for automatic coupling, (that is, fully opened,) for if one of the hooks should not be fully opened it is obvious that the other hook would not engage with it, but instead of coupling simply close it. To overcome this difficulty different plans have been suggested—such as tilting the pivot-pin of the coupling-hook to throw it open, or to use a spring for that purpose—all of which have been found impracticable. In

my coupler I construct the hook in such a manner that it will be automatically thrown wide open and held in that position as soon as the locking-bolt is withdrawn; and to this end I provide the coupling-hook with a slight vertical play on its pivot-pin between the upper and lower knuckles of the head, and with inclines on its under side which rest on corresponding inclines on the draw-head, all so arranged that the weight of the coupling-hook will thereby be enabled to swing the coupling open.

In the drawings, Q and R show the inclines on the under side of the hook, the incline Q being steeper than the incline R for the purpose of giving the necessary initial momentum to start the hook from its closed position and open it to its fullest extent. The corresponding inclines on the draw-head are represented in the drawings by the inclined bearings S and T on the bottom of the recess H. To make the inclines act during the whole swing of the coupling-hook and reduce the friction, I make them at or near the knuckles in which the coupling-hook swings, and to keep the hook open, so that it cannot be accidentally closed by the vibration or motion of the car or by its rebounding, I make the inclines of sufficient extent to carry the hook positively to the full degree of its opening.

It is obvious that instead of using the two inclines Q and R a single one would effect the same purpose; but such a construction is not so desirable, as it will be necessary, in order to insure positive action, to give the hook more vertical play than in the present form, where I make the incline Q of short extent and very abrupt, so as to push the hook quickly into the position shown in dotted lines at U in Fig. 3 and the incline R more gradually to complete the movement, throwing the hook into the position V, in which it is fully opened.

To connect my coupling with the ordinary link and pin, I provide the hook D with a slot W, in which to engage the link by the usual pin, and to prevent the link from entering too far into the coupling-head I provide a lug or abutment X on the arm of the hook D, by which the link is stopped from entering the head too far to permit its being coupled at the other end.

My method of coupling cars from the locomotive is shown in Fig. 8, in which *f* and *g* are bell-crank levers, the former being located near the forward coupler of the locomotive and adapted to bear with its arm *f'* against the gravity-dog M. These levers, in connection with the rods *h* and *i*, are so arranged that the engineer, by simply pressing on the top of the rod *i* with his foot, will raise the dog M, thereby withdrawing the latch-bolt of the coupling. A similar device is used in connection with the coupler in the rear of the tender.

What I claim as my invention is—

1. In a car-coupling of the character described, the inclined bearings Q and R, formed on the under side of the coupling-hook, and corresponding inclined bearings S and T on the draw-head, arranged and adapted to open the coupling-hook, substantially as described.

2. In a car-coupling of the character described provided with the locking-latch L and gravity-dog M, the device for operating said gravity-dog from the cab of the locomotive to uncouple, such as the parts *f*, *g*, *h*, and *i*, substantially as described.

3. In a car-coupling, the combination, with a draw-head extended on its forward end upon one side to form a side support for the coupling-hook, a coupling-hook D, pivotally mounted in said side support and provided with a coupling-arm and locking-arm, a recess H in the side support to receive the locking-arm of the coupling-hook, a lateral offset G on said locking-arm, a transverse aperture I through the side support, into which said offset is adapted to engage, a longitudinally-sliding locking-latch L, seated in the draw-head, and the inclined bearing on which the hook is supported in the draw-head, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of July, 1889.

JOHN SKINNER.

Witnesses:
W. A. ROSS,
ED. MCBREARTY.